IN THE CLAIMS:

1. (Original) An arrangement for iterative channel impulse response estimation in a system employing a transmission channel, comprising:

channel impulse response estimation means for producing from a received signal (y) a channel impulse response estimate signal ($\underline{\hat{p}}$); and

a noise estimator for producing from the received signal (y) a noise estimate signal, characterised in that said noise estimate signal comprises a matrix (W) representing the inverse of noise covariance, and

said channel impulse response estimation means is arranged to iteratively respond to said matrix (W) to iteratively produce an improved channel impulse response estimate signal ($\underline{\hat{p}}$).

2. (Original) The arrangement of claim 1 wherein said matrix (W) representing the inverse of noise covariance is calculated at each iteration.

3. (Original) The arrangement of claim 1 wherein said matrix (W) representing the inverse of noise covariance is selected from predetermined values corresponding to statistics of expected noise.

4. (Currently amended) The arrangement of claim 2 ~~or 3~~ wherein the channel impulse response estimate signal ($\underline{\hat{p}}$) is represented by:

$$(H^H \cdot W \cdot H)^{-1} \cdot H^H \cdot W \cdot \underline{y},$$

where H represents a matrix depending on known symbols, $\underline{y}$ represents a vector of received channel samples, and W represents the inverse noise covariance matrix.

5. (Currently amended) The arrangement of claim 4 ~~when dependent on claim 3~~ <u>wherein said matrix (W) representing the inverse of noise covariance is selected from predetermined values corresponding to statistics of expected noise; and</u>
wherein the predetermined values corresponding to statistics of expected noise are selected according to the noise types: Gaussian, upper adjacent interferer, lower adjacent interferer, or co-channel interferer.

6. (Currently amended) The arrangement of ~~any preceding~~ claim 1 wherein the channel impulse response estimation means is arranged to produce the channel impulse response estimate signal ($\underline{\hat{p}}$) as a weighted least square function.

7. (Currently amended) The arrangement of ~~any preceding~~ claim 1 wherein the system is a wireless communication system.

8. (Original) The arrangement of claim 7 wherein the system is a GSM system.

9. (Original) The arrangement of claim 8 wherein the system is an EDGE system.

10. (Currently amended) A receiver for use in a system employing a transmission channel, the receiver comprising the arrangement of ~~any preceding~~ claim 1.

11. (Original) A method, for iterative channel impulse response estimation in a system employing a transmission channel, comprising:

providing channel impulse response estimation means for producing from a received signal (y) a channel impulse response estimate signal ($\underline{\hat{p}}$); and

providing a noise estimation means for producing from the received signal (y) a noise estimate signal,

said noise estimate signal comprises a matrix (W) representing the inverse of noise covariance, and

said channel impulse response estimator iteratively responds to said matrix (W) to iteratively produce an improved channel impulse response estimate signal ($\underline{\hat{p}}$).

12. (Original) The method of claim 11 wherein said matrix (W) representing the inverse of noise covariance is calculated at each iteration.

13. (Original) The method of claim 11 wherein said matrix (W) representing the inverse of noise covariance is selected from predetermined values corresponding to statistics of expected noise.

14. (Currently amended) The method of claim 12 ~~or 13~~ wherein the channel impulse response estimate signal ($\underline{\hat{p}}$) is represented by:

$$(H^H \cdot W \cdot H)^{-1} \cdot H^H \cdot W \cdot \underline{y},$$

where H represents a matrix depending on known symbols, $\underline{y}$ represents a vector of received channel samples, and W represents the inverse noise covariance matrix.

15. (Currently amended) The arrangement of claim 14 ~~when dependent on claim 13~~ wherein said matrix ($\underline{W}$) representing the inverse of noise covariance is selected from predetermined values corresponding to statistics of expected noise; and
wherein the predetermined values corresponding to statistics of expected noise are selected according to the noise types: Gaussian, upper adjacent interferer, lower adjacent interferer, or co-channel interferer.

16. (Currently amended) The method of ~~any one of claims 11 to 15~~ claim 11 wherein the channel impulse response estimator produces the channel impulse response estimate signal ($\underline{\hat{p}}$) as a weighted least square function.

17. (Currently amended) The method of ~~any one of claims 11 to 16~~ claim 11 wherein the system is a wireless communication system.

18. (Original) The method of claim 17 wherein the system is a GSM system.

19. (Original) The method of claim 17 wherein the system is an EDGE system.

20. (Currently amended) A computer program element comprising computer program means for performing the method of ~~any one of claims 11 to 19~~ claim 11.